



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,188	09/10/2003	Jeffrey Wayne Eberhard	RD-28,444-2	8797
6147	7590	08/02/2005	EXAMINER	
GENERAL ELECTRIC COMPANY GLOBAL RESEARCH PATENT DOCKET RM. BLDG. K1-4A59 NISKAYUNA, NY 12309			HO, ALLEN C	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 08/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/666,188

Applicant(s)

EBERHARD ET AL.

Examiner

Allen C. Ho

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36,37 and 39-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36,37 and 39-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 36, 37, 39-42, and 44-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Hughes (U. S. Patent No. 5,754,622).

With respect to claim 36, Hughes disclosed a radiation imaging system comprising: a movable radiation source; a radiation detector (90); a collimator (4) comprising an adjustable geometry aperture assembly (column 4, lines 3-13); a collimator positioning apparatus (6, 18) configured such that an adjustment of the geometry of an aperture is synchronized with the movement of the radiation source and coordinated with the radiation source position (column 3, lines 54-66) so as to limit the incident radiation to a predetermined exposure area (an imaging area) at the detector.

With respect to claim 37, Hughes disclosed the imaging system of claim 36, wherein the aperture assembly is configured for adjusting at least one of the position of the aperture and the shape of the aperture.

With respect to claims 39 and 40, Hughes disclosed the imaging system of claim 36, wherein the aperture assembly comprises a plurality of movable sides (multileaf collimator).

With respect to claim 41, Hughes disclosed the imaging system of claim 36, wherein the aperture assembly comprises multiple independently positionable sections (multileaf collimator) with different boundary shapes (the aperture assembly has different boundary shapes depending on the positions of the positionable sections).

With respect to claim 42, Hughes disclosed the imaging system of claim 41, wherein the multiple sections have linear boundaries.

With respect to claim 43, Hughes disclosed the imaging system of claim 39, wherein the plurality of sides comprise rotationally and translationally movable sides.

With respect to claim 44, Hughes disclosed a method for radiation imaging, comprising: moving (6) a radiation source in a plurality of radiation source positions; adjusting an aperture (4) by synchronizing the aperture geometry adjustment with the movement of the radiation source and coordinating at least one of the position and the shape of the aperture with the respective position of the radiation source (column 3, lines 54-66) such that a radiation beam emanating from the radiation source is collimated to limit the incident radiation to a predetermined exposure area (an imaging area) at a radiation detector; and detecting the radiation beam on the radiation detector (90).

With regard to claim 45, Hughes disclosed a tomosynthesis system comprising: a movable radiation source; a radiation detector (90); a collimator (4) comprising an adjustable geometry assembly configured such that an adjustment of the geometry of an aperture is synchronized in time with respect to a movement of the radiation source and coordinated in space with respect to the radiation source position (column 3, lines 54-66) so as to limit the incident radiation of the tomosynthesis system to a predetermined exposure area (an imaging

Art Unit: 2882

area) at the detector. Note: although this claim recites "tomosynthesis system", it fails to define a system that is structurally distinguishable from the prior art. Structurally, this tomosynthesis system comprises a movable radiation, a radiation detector, and a collimator synchronized with the motion of the radiation source, and it is not distinguishable from the prior art. MPEP § 2114.

With regard to claim 46, Hughes disclosed the tomosynthesis system of claim 45, wherein the aperture assembly is configured for adjusting at least one of the position of the aperture and the shape of the aperture.

With regard to claim 47, Hughes disclosed the tomosynthesis of claim 45, further comprising a collimator assembly comprising a collimator positioning apparatus (6, 18) for positioning the collimator.

Response to Arguments

3. Applicant's arguments filed 19 April 2005 have been fully considered but they are not persuasive.

The applicants argue that Hughes failed to disclose a collimator comprising an adjustable geometry aperture assembly such that an adjustment of the geometry of an aperture is synchronized with the movement of the radiation source. The examiner respectfully disagrees. Hughes clearly disclosed a collimator comprising an adjustable geometry aperture assembly such as a multileaf collimator (column 4, lines 3-13). During treatment, the radiation beam is modulated by the multileaf collimator as the radiation beam rotates about the rotation axis (8). At each gantry angle, the radiation field projected onto the target (12) is modulated by adjusting the positions of the collimating leaves in the multileaf collimator (column 3, lines 54-66). Thus,

Art Unit: 2882

an adjustment of the geometry of an aperture is synchronized with the movement (rotation) of the radiation source.

The applicants further argue that Hughes failed to disclose limiting the incident radiation to a predetermined exposure area at the detector. The examiner respectfully disagrees. Hughes disclosed a radiation detector (90), which is used to verify the dose delivered to the target (column 4, lines 30-44). To verify the amount of dose delivered, the radiation detector collects the exit dose information, which is radiation transmitted through the target. Thus, the radiation is always limited to a predetermined exposure area (measurement area) at the detector. Otherwise, the exit dose information could not be accurately determined because not all of the exit radiations are intercepted by the radiation detector.

For the reasons above, the rejection is being maintained.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 2882

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached at (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Allen C. Ho
Primary Examiner
Art Unit 2882

29 July 2005